

Build Green

Designing High-Performance Homes

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Pactiv Building Products has an online AIA course for you!

- Would you like to learn about protecting your residential walls?
- Would you like to earn an AIA and state credit?

Then go to the AEC Daily website below to take our course titled:

Moisture Management in Residential Walls

<http://www.aecdaily.com/sponsor/pactiv>

This is a free course that is automatically recorded for AIA credit (HSW) upon completion of the online test.

A few notes:

- If you do not have an AEC Daily account you will need to create a user name and password. This will only take a second or two.
- You will need to pull the "password" from one of the slides in the presentation in order to open up the test. This password is random and will be in BOLD lettering so just scroll through it and make a note.
- If you have questions please call your GreenGuard representative.



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Popular Building Systems and Adjustable Components (AIA/CES)

Providing an overview of adjustable anchoring systems, including a discussion of removable anchors, clewing anchors, precast concrete anchors, masonry anchors, and adjustable expanded metal systems.

How Glass Windows Fit In: An Collection of Glass Products

Provides an overview of flat glass manufacturing and various architectural glass products, including clear, tinted, and heat treated glass, as well as coated products (Low-E, reflective) and laminated products (insulated, laminated).

Reflection Protection Roof Coating Systems

Provides an overview of the use of reflection protection coatings in the restoration of existing roofing systems, including system components, product composition, and installation methods for metal, BUR, and single ply roofs.

Cool Thermoplastic Roofing Systems for Residential Buildings

Provides an overview of cool thermoplastic roofing systems, including a discussion of types of single ply membranes, solar reflectance, other heat island related technology (solaris, LEED certification, and low carbon).

Sealed Metal Roof Surface Flashing Systems

Provides an overview of sealed metal roofing systems for metal surface floor markets.

Waterproofing Exterior Concrete Wall Surfaces

Provides an overview of the design and application of liquid-applied exterior waterproofing systems, including exterior concrete, exterior masonry, and exterior wall systems. Includes information on preparation, testing and shoring, and product limitations.

Expansion Joint Covers

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Moisture Management in Residential Walls

To receive your credit for this course, follow these steps:

1. View Course Details

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4. Next Step: View Your Results

PACTIV Building Products

Exam Question Questions

1. The danger of removing water from below is increased by making it out quality is shown as:
☐ deflection
☐ drainage
☐ drying
☐ durability

2. The permeability of a masonry refers to the measure of:
☐ UV stability
☐ low permeability
☐ performance
☐ breathability

3. The three main types of flashing are:
☐ sheet metal, composite, plastic
☐ glass, sheet metal, composite
☐ copper, sheet metal, composite
☐ coated aluminum, sheet metal, composite

4. The drying potential of the wall is affected by:
☐ vapor and moisture barriers
☐ the permeability of the cladding
☐ the interior finish materials
☐ all of the above

5. Membranes can not be the attachment of thermal insulation.
☐ True
☐ False

6. Which of the following applications should have a double layer second weather barrier?
☐ stucco
☐ vinyl
☐ brick
☐ all of the above

7. Typically, for new construction flanged window installation, a band of sealant is applied to the window sill and bottom of the window frame.
☐ True
☐ False

8. Flashing seams for arched windows should be overlapped at least:
☐ 1 inch
☐ 2 inches
☐ 4 inches
☐ 6 inches

9. Sealant tape can be used to repair gaps and tears in damaged foam overlap.
☐ True
☐ False

10. Roof overhangs, gutters, projecting sills, and wall claddings are all strategies for:
☐ deflection
☐ drainage
☐ drying
☐ durability

Go back

AIA Course at AEC Daily Website



Food Service / Food Packaging



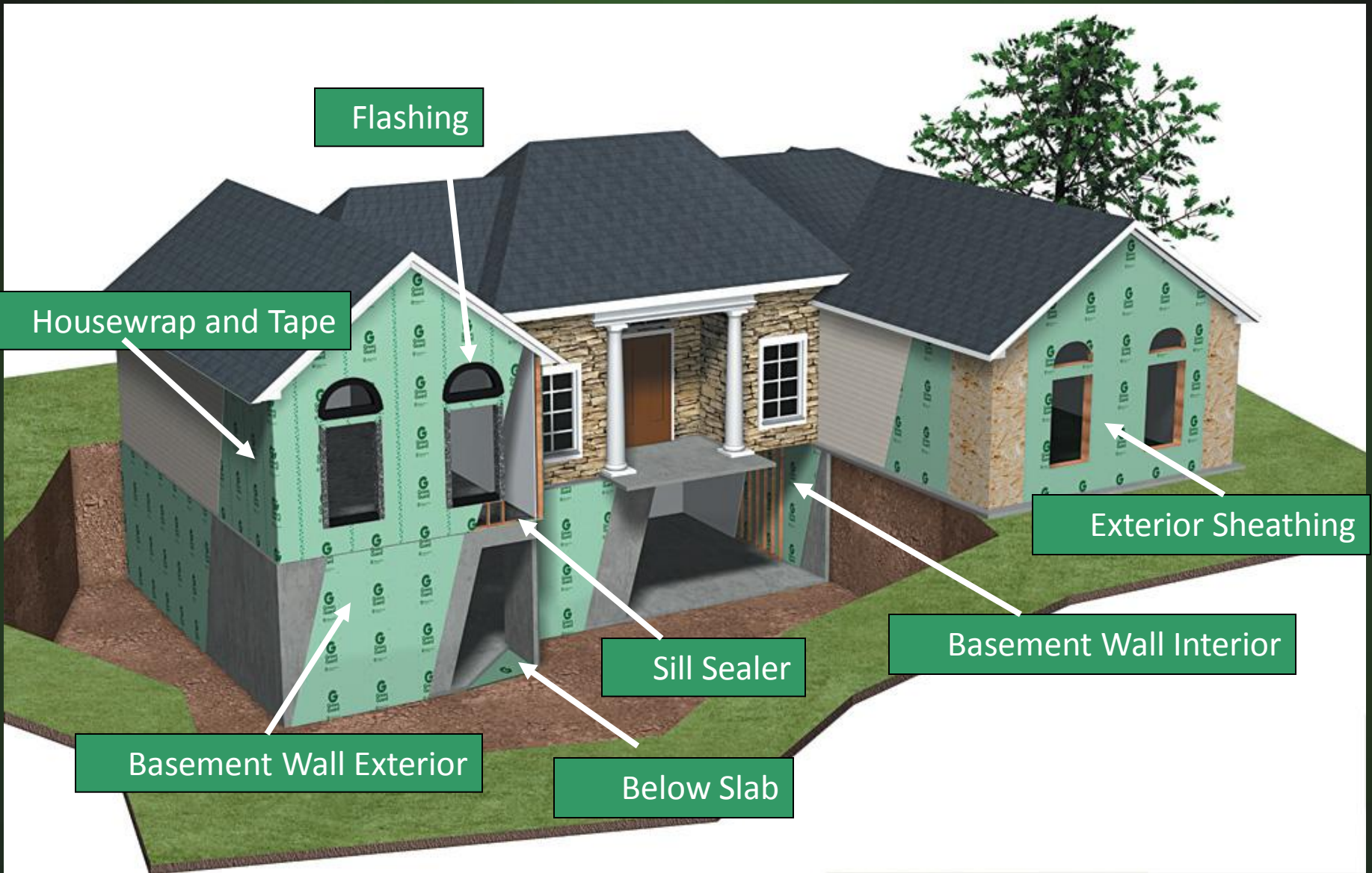
Hefty® Consumer Products



Underlayment for Vinyl Siding

Alside Platinum Series







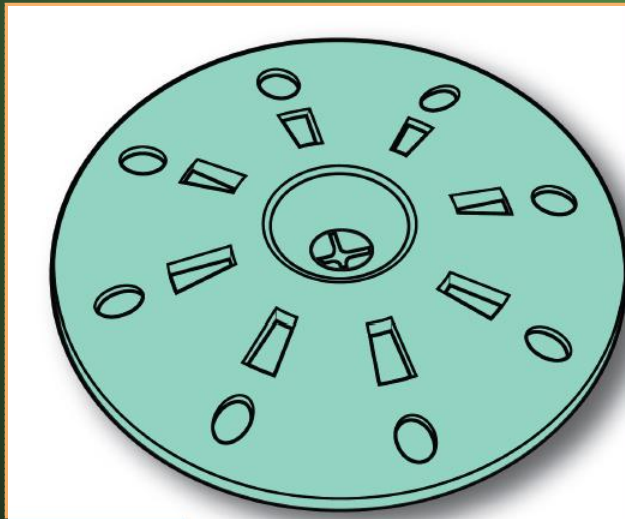
Commercial

Supporting Products



Building Wrap and
Sheathing Tape

Sill Sealer



Caps

Butyl Flashing





INTERNATIONAL GREEN CONSTRUCTION CODE™

PUBLIC VERSION 1.0, MARCH 2010

-  ASHRAE/USGBC/IES STANDARD 189.1-2009
STANDARD FOR THE DESIGN OF HIGH-PERFORMANCE GREEN BUILDINGS -
A JURISDICTIONAL COMPLIANCE OPTION OF THE IGCC
-  ICC® 700-2008 NATIONAL GREEN BUILDING STANDARD™ -
FOR RESIDENTIAL OCCUPANCIES (*by reference*)



“So what’s with all these ‘green’ programs providing ‘points’ for ‘durability’ and ‘indoor air quality’? I mean it’s pretty pathetic if we have to reward architects and engineers when they provide details and specifications that should be basic to fundamental practice. If you design and install a controlled ventilation system that meets Standard 62 you get points. You get more points if you keep the rain out and design the building to dry if it gets wet. And you get still more points if the occupants are actually comfortable. Aren’t these code requirements? Shouldn’t these be ‘the standard of care’?”

Joseph Lstiburek, Ph.D., P. Eng.

Focusing on the Important Stuff

Standard of Care for Buildings

- Structurally sound
- Controlled ventilation system
- Does not leak rainwater
- Comfortable
- *Saves energy*

“Show me a building that meets code and the standard of care and saves energy and I will show you a green building. A ‘real’ green building, not a social statement that saps money, time and resources from the real problems facing the planet.

Joseph Lstiburek, Ph.D., P.Eng.

The Fundamentals of “Green” Buildings

*Water-Managed
Energy-Efficient
Sustainable
Resource-Efficient*

Water - Managed

- Durability, Sustainability and Energy Efficiency are functions of moisture control.
- Moisture degradation is the largest factor limiting the service life of a building.
- Rainwater is the largest contributor to moisture accumulation in building enclosures.

Water Management

2,000 sq ft house
“Buffer Capacity”

100-year-old Masonry House
(with plaster walls)
500 gallons

MOLD THRIVES ON THE MOISTURE IN TODAY'S HOUSES

Mold can't survive and reproduce without water, so the ability of particular building materials to wick away, absorb, and store water (their buffer capacity) is related directly to whether mold can thrive in your house. Materials with higher buffer capacities produce fewer problems, making it harder for mold to set up shop.

LET'S COMPARE THE BUFFER CAPACITY OF THREE 2000-SQ.-FT. HOUSES

Most wood-frame houses average 5% moisture content (MC). When solid lumber reaches MC of around 16%, mold is active. If the MC is under 15%, mold is dormant. Mold becomes a problem only when we push the MC from 5% to above 15%. The difference between 5% and 15% is 10%, so the typical moisture-storage capacity of a wood-frame house is around 10% by weight. In other words, the house can store 10% of its weight in moisture before mold can break out of dormancy and reproduce.

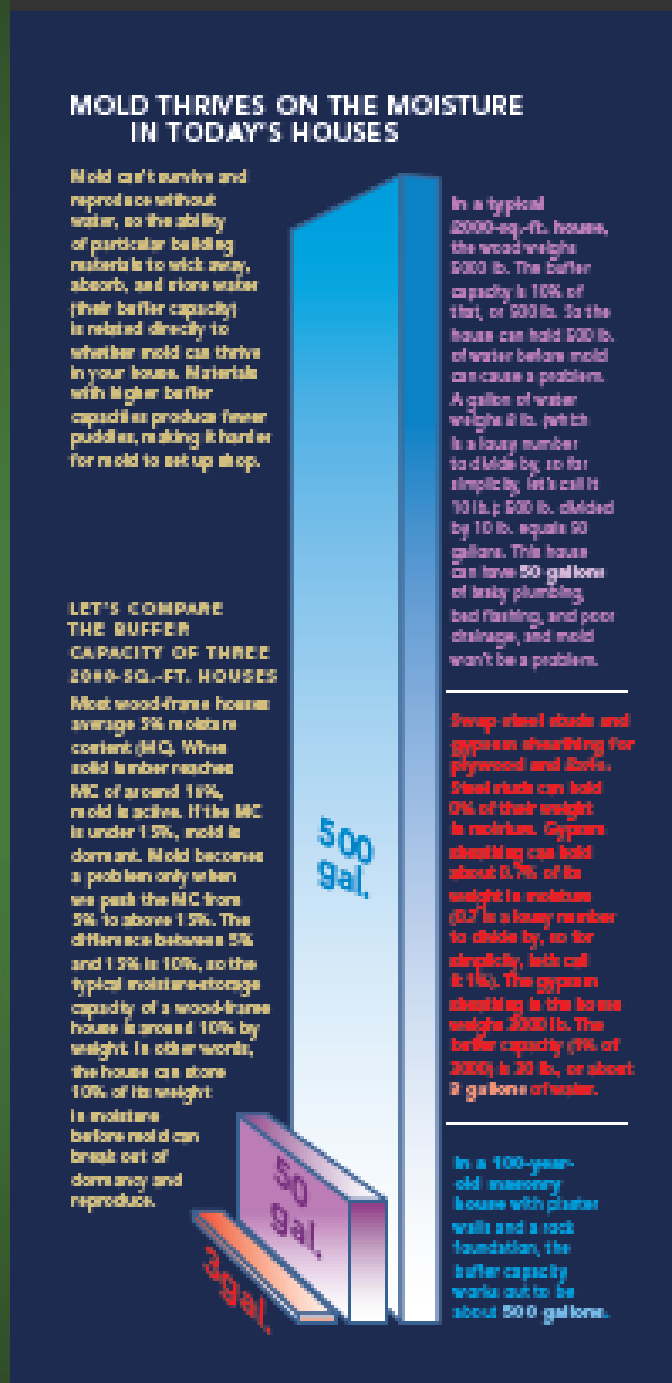
In a typical 2000-sq.-ft. house, the wood weighs 2000 lb. The buffer capacity is 10% of that, or 200 lb. So the house can hold 200 lb. of water before mold can cause a problem. A gallon of water weighs 8 lb., which is a lousy number to divide by, so for simplicity, let's call it 10 lb.; 200 lb. divided by 10 lb. equals 20 gallons. This house can have 20 gallons of leaky plumbing, bad fluting, and poor drainage, and mold won't be a problem.

Swap steel studs and gypsum sheathing for plywood and 2x's. Steel studs can hold 0% of their weight in moisture. Gypsum sheathing can hold about 0.7% of its weight in moisture (0.7 is a lousy number to divide by, so for simplicity, let's call it 1%). The gypsum sheathing in the house weighs 2000 lb. The buffer capacity (1% of 2000) is 20 lb., or about 2 gallons of water.

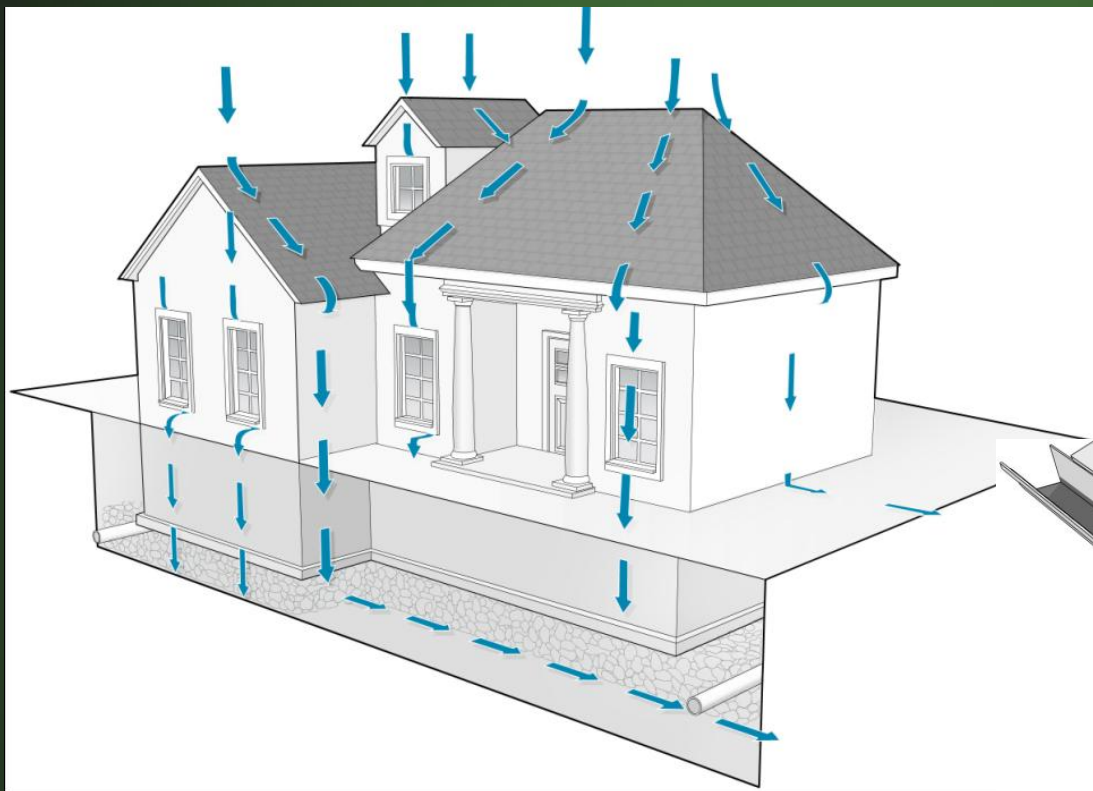
In a 100-year-old masonry house with plaster walls and a rock foundation, the buffer capacity works out to be about 500 gallons.

Wood-Frame House
50 gallons

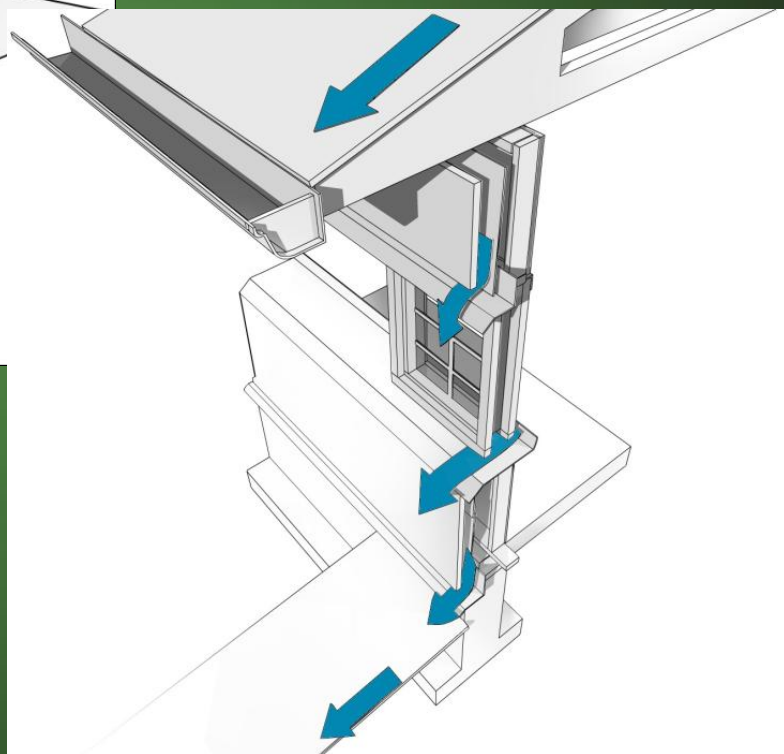
Steel-Frame House
3 gallons



Water Management Priority #1: Drain the Rain



➤ Deflection



➤ Drainage

➤ Drying



Installing Water Resistive Barrier to keep rain off sheathing

RainDrop provides drainage space



DC14 Drainage Mat



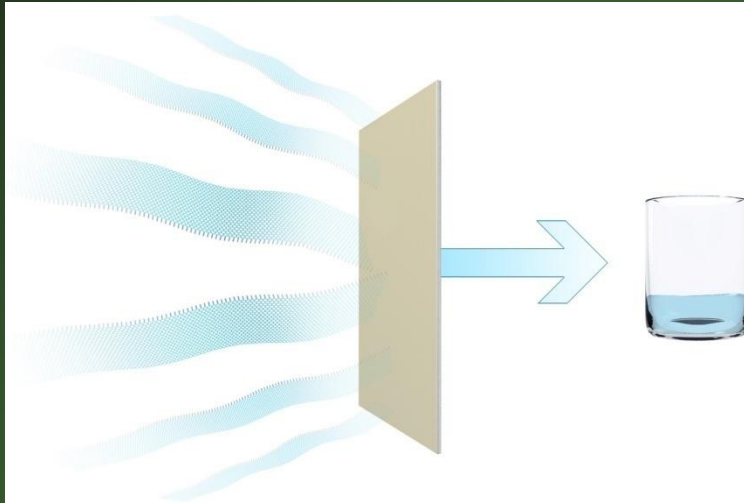
- Gravitational drainage
- Ventilation drying



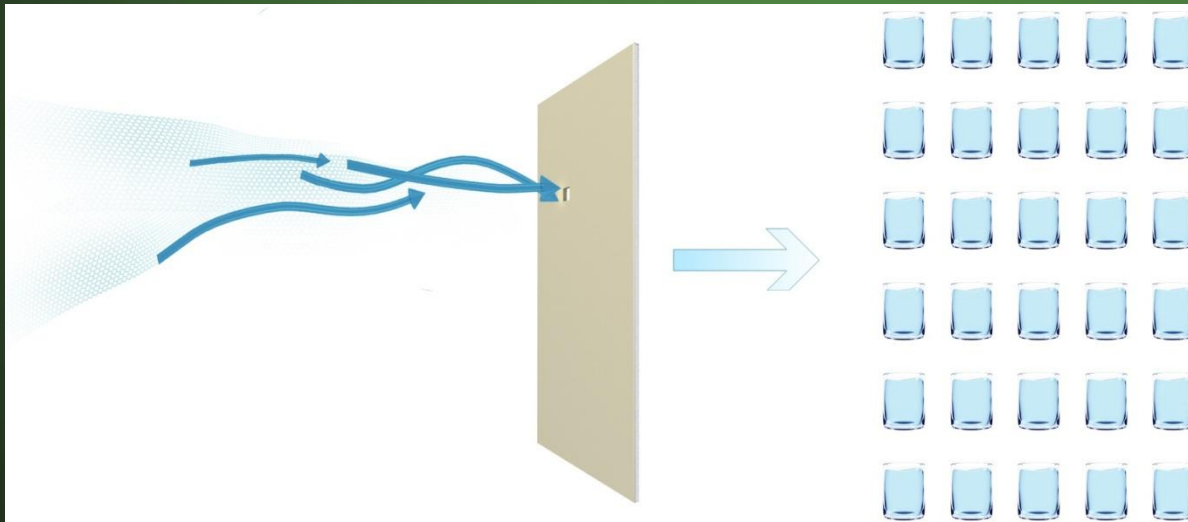
Water Management, Energy Efficiency and Sustainability are all interconnected.



Leaky houses: stopping air infiltration



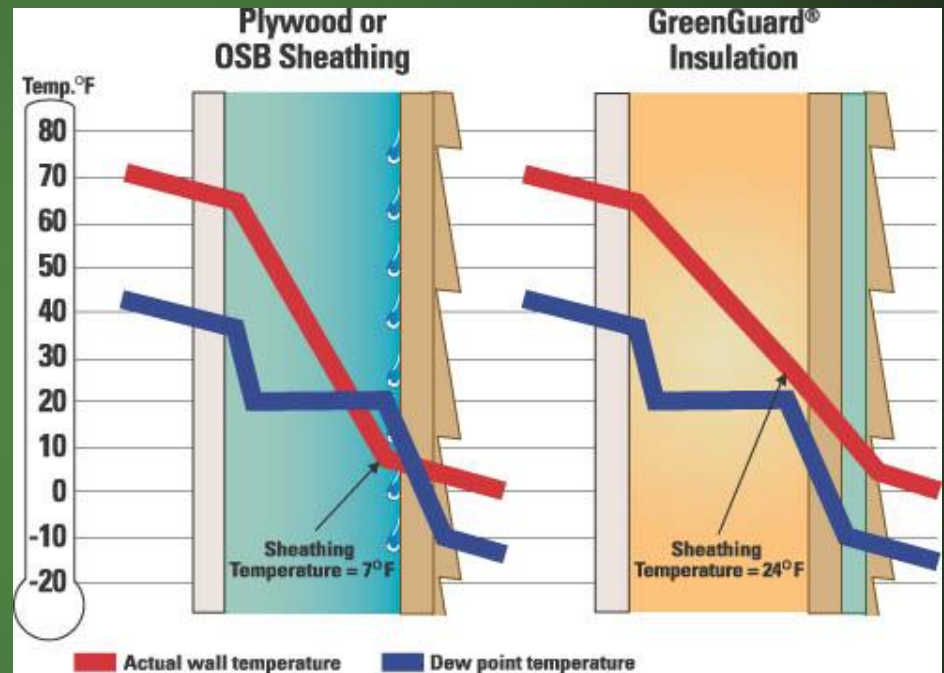
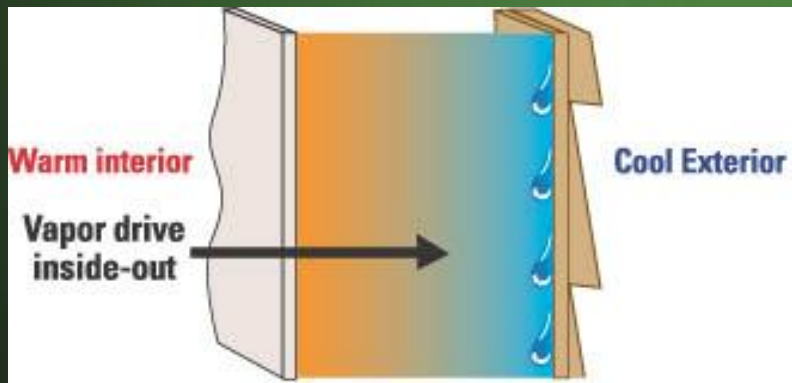
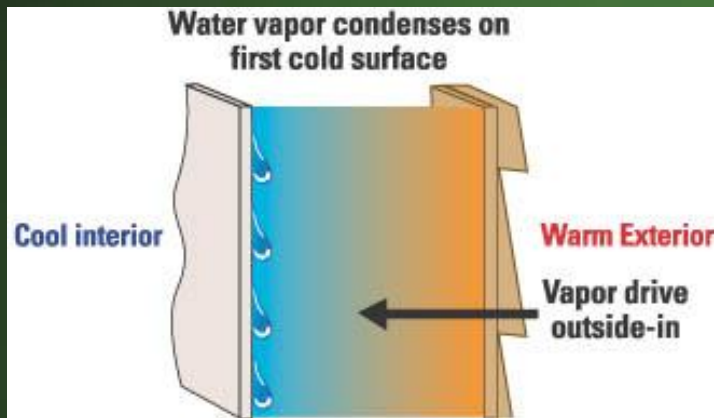
1/3 quart of water
through diffusion



30 quarts of water
through a 1" square
hole

Example of diffusion vs. air leakage during one
heating season in a cold climate

The Dew Point is the surface temperature at which moisture vapor will condense to liquid water, given a combination of air temperature and relative humidity



The insulation raised the wall temperature thus keeping the inside face of the outside wall above the “dew point”.



Mold from condensation on cavity
side of exterior sheathing

GreenGuard Building Wraps



WRB (Water Resistive Barrier) is also air infiltration barrier



Fanfold as WRB when seams taped





Air Sealing of rim joist and caulking

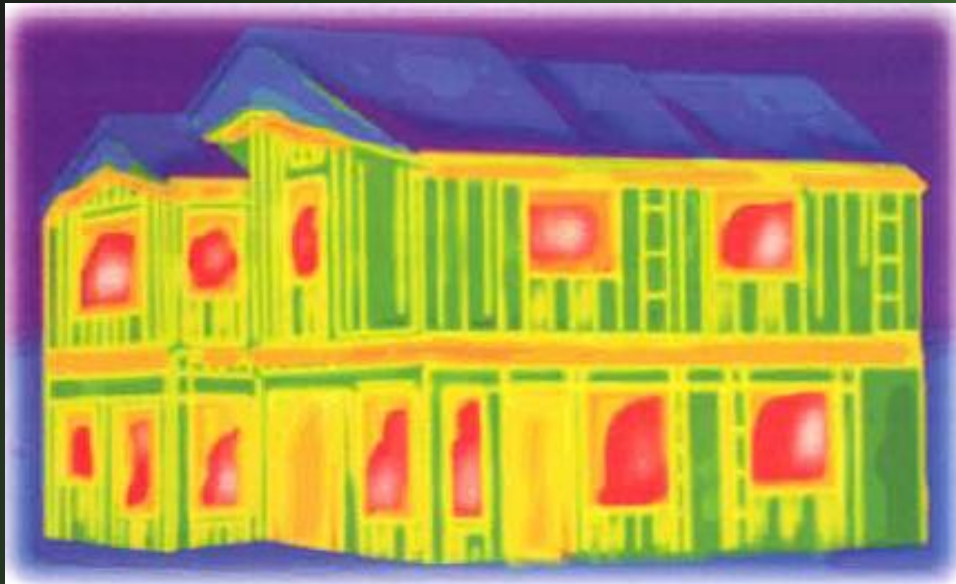


Air sealing of mechanicals

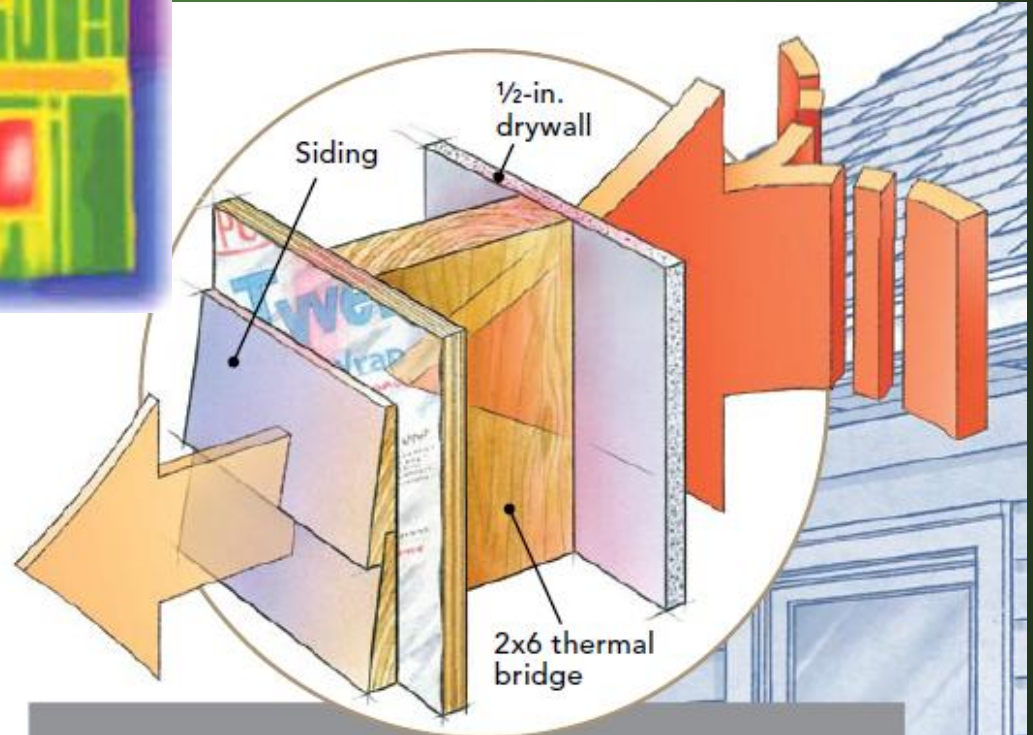


Sealed ducts

Thermal Bridging

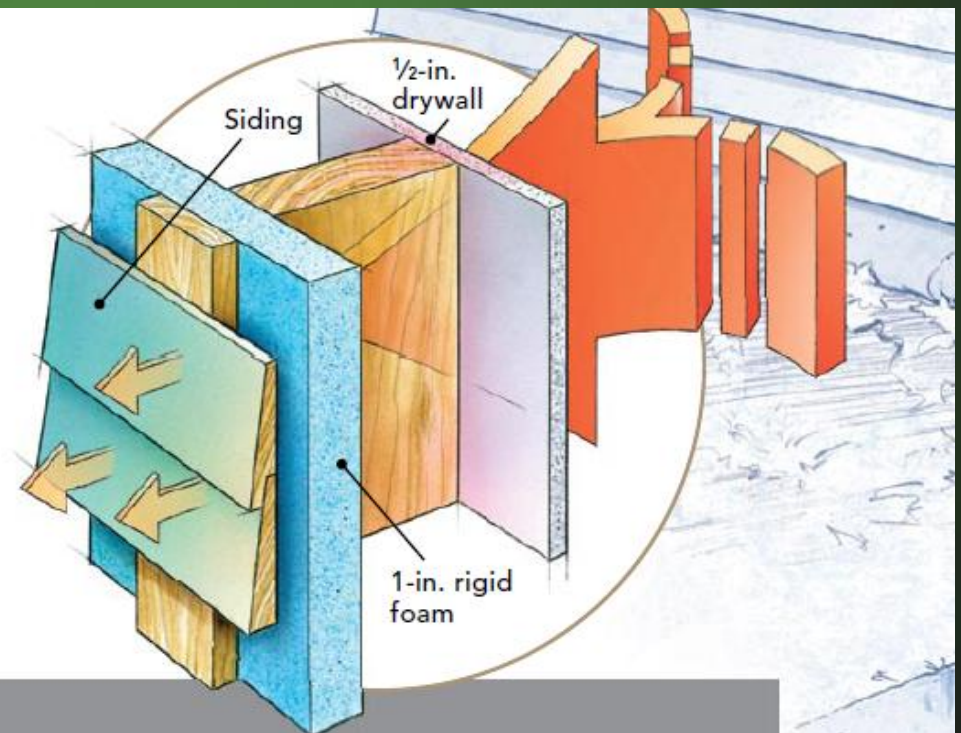


Heat loss viewed
through thermal imaging

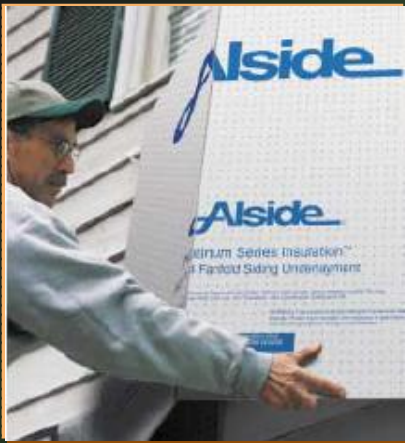


THE FLAW IN A
CONVENTIONAL WALL

Insulation Board breaks thermal bridge



BREAK THE THERMAL BRIDGE



Resource Efficient *GreenGuard Siding Underlayments*

- Contain at least 60% post-industrial recycled content
- Reduce energy demand by increasing R-value
- Reduce energy demand by decreasing air infiltration
- Reduce energy demand by decreasing thermal bridging .



Resource Efficient *GreenGuard Insulation Boards*

- Contain at least 30% post-industrial recycled content
- Reduce energy demand by increasing R-value
- Reduce energy demand by decreasing air infiltration
- Reduce energy demand by decreasing thermal bridging



Resource Efficient *GreenGuard Building Wraps*

- Protect sheathing and cavity from rainwater wetting.
- Reduce unwanted air infiltration into the wall cavity, thus helping to protect the installed R-value of cavity insulation.

Green Building Summary

Focus on Fundamentals

“Before you can have a ‘green’ building you need a building first. Presumably this building needs to be able to stand up, not be blown away in a hurricane, not fall down in an earthquake, not burn, not leak rainwater, not be moldy, not rot, not corrode and otherwise be able to meet applicable building codes.”

Joseph Lstiburek, Ph.D., P. Eng.